

Claims

[c1] What is claimed is:

1. An inverter for providing AC voltages having two different frequencies to a lamp circuit, the inverter comprising:
 - a first switch for passing a DC voltage;
 - a first oscillating circuit coupled to the first switch for receiving the DC voltage and generating a first AC voltage having a first frequency;
 - a second oscillating circuit coupled to the first switch for receiving the DC voltage and generating a second AC voltage having a second frequency; and
 - a transformer coupled to the first oscillating circuit and the second oscillator for transforming the first AC voltage provided by the first oscillating circuit or the second AC voltage provided by the second oscillator into a third AC voltage and passing the third AC voltage to the lamp circuit;
- wherein the first switch selectively passes the DC voltage to the first oscillating circuit or the second oscillating circuit.

[c2] 2. The inverter of claim 1, wherein the first switch is cou-

pled to a power supply for receiving the DC voltage provided by the power supply.

- [c3] 3.The inverter of claim 1, wherein the inverter further comprises: a second switch coupled between a power supply and the first switch for passing a first DC voltage or a second DC voltage provided by the power supply to the first switch as the DC voltage.
- [c4] 4.The inverter of claim 1, wherein the first oscillating circuit comprises:
 - a first capacitor coupled between a first node and a second node;
 - a first resistor coupled between a third node and a fourth node;
 - a second resistor coupled between the third node and a fifth node;
 - a first transistor having a first end coupled to the first node, a second end coupled to the fourth node, and a third end coupled to ground; and
 - a second transistor having a first end coupled to the second node, a second end coupled to the fifth node, and a third end coupled to ground.
- [c5] 5.The inverter of claim 4, wherein the transformer comprises:
 - a first coil coupled between the first node and the third

node;
a second coil coupled between the third node and the second node;
a third coil coupled between the fifth node and the fourth node; and
a seventh coil coupled between a first end and a second end of the lamp circuit.

- [c6] 6.The inverter of claim 1, wherein the second oscillating circuit comprises:
- a second capacitor coupled between a sixth node and a seventh node;
- a third resistor coupled between an eighth node and a ninth node;
- a fourth resistor coupled between the eighth node and a tenth node;
- a third transistor having a first end coupled to the sixth node, a second end coupled to the ninth node, and a third end coupled to ground; and
- a fourth transistor having a first end coupled to the seventh node, a second end coupled to the tenth node, and a third end coupled to ground.
- [c7] 7.The inverter of claim 6, wherein the transformer comprises:
- a fourth coil coupled between the sixth node and the eighth node;

a fifth coil coupled between the eighth node and the seventh node;
a sixth coil coupled between the tenth node and the ninth node; and
a seventh coil coupled between a first end and a second end of the lamp circuit.

[c8] 8.The inverter of claim 1, wherein the inverter is used in a scanner, a multi-function peripheral, or a fax machine.

[c9] 9.A method for providing AC voltages to a lamp circuit, the method comprising:
providing the lamp circuit with a first AC voltage having a first frequency while the lamp circuit is in a starting state; and
providing the lamp circuit with a second AC voltage having a second frequency after the lamp circuit enters a normal state;
wherein the first frequency is higher than the second frequency.